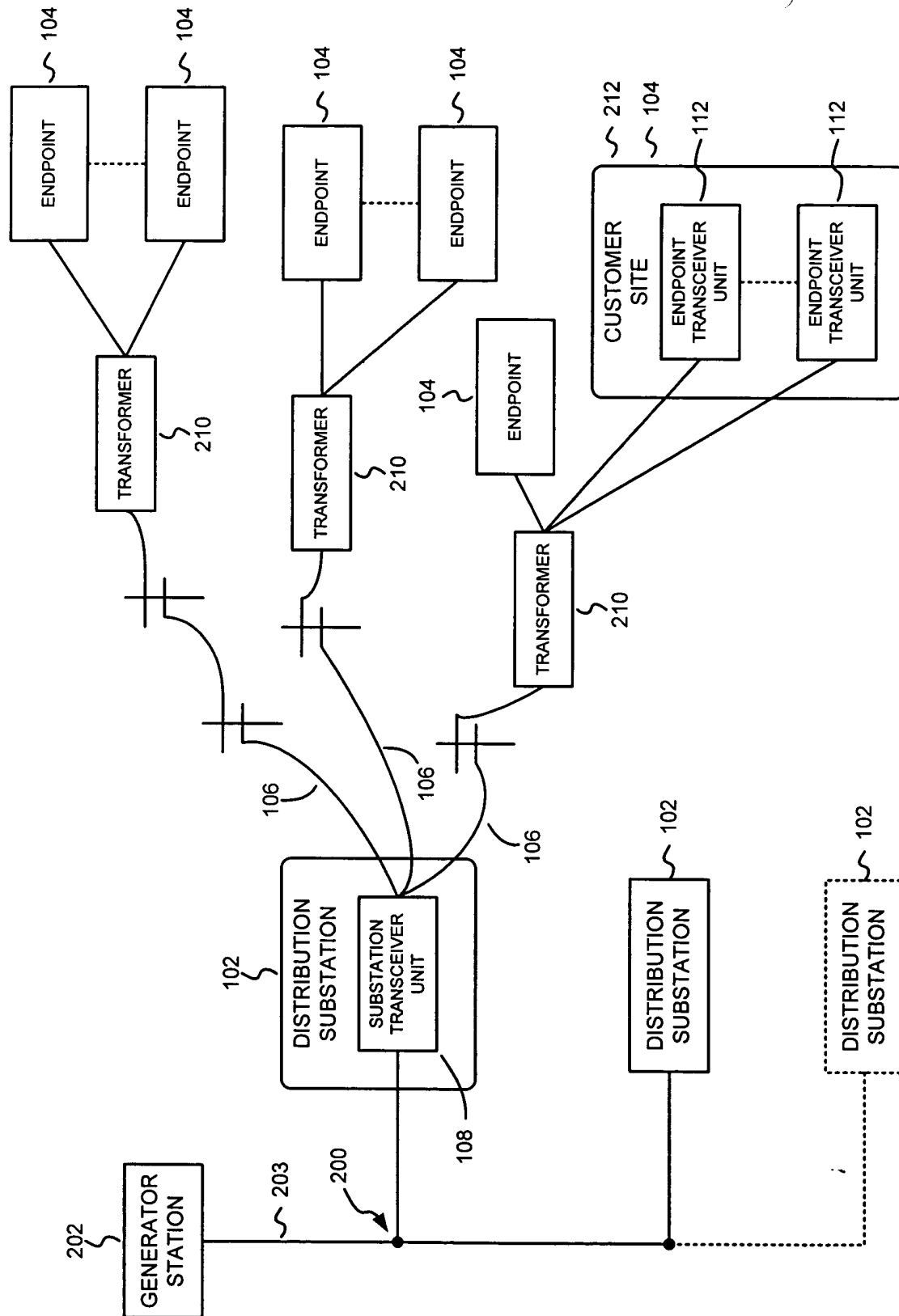FIGURE 1

FIGURE 2

FIGURE 3

FIGURE 4

FIGURE 5

ENDPOINT PROCESSOR UNIT, 560

MEMORY 620

OS
622

APP(S)
624

STORAGE
626

EEPROM
630

670

PROCESSOR
610

TIMER
650

660

INTERFACE UNIT 640

INTERRUPT
CONTROL
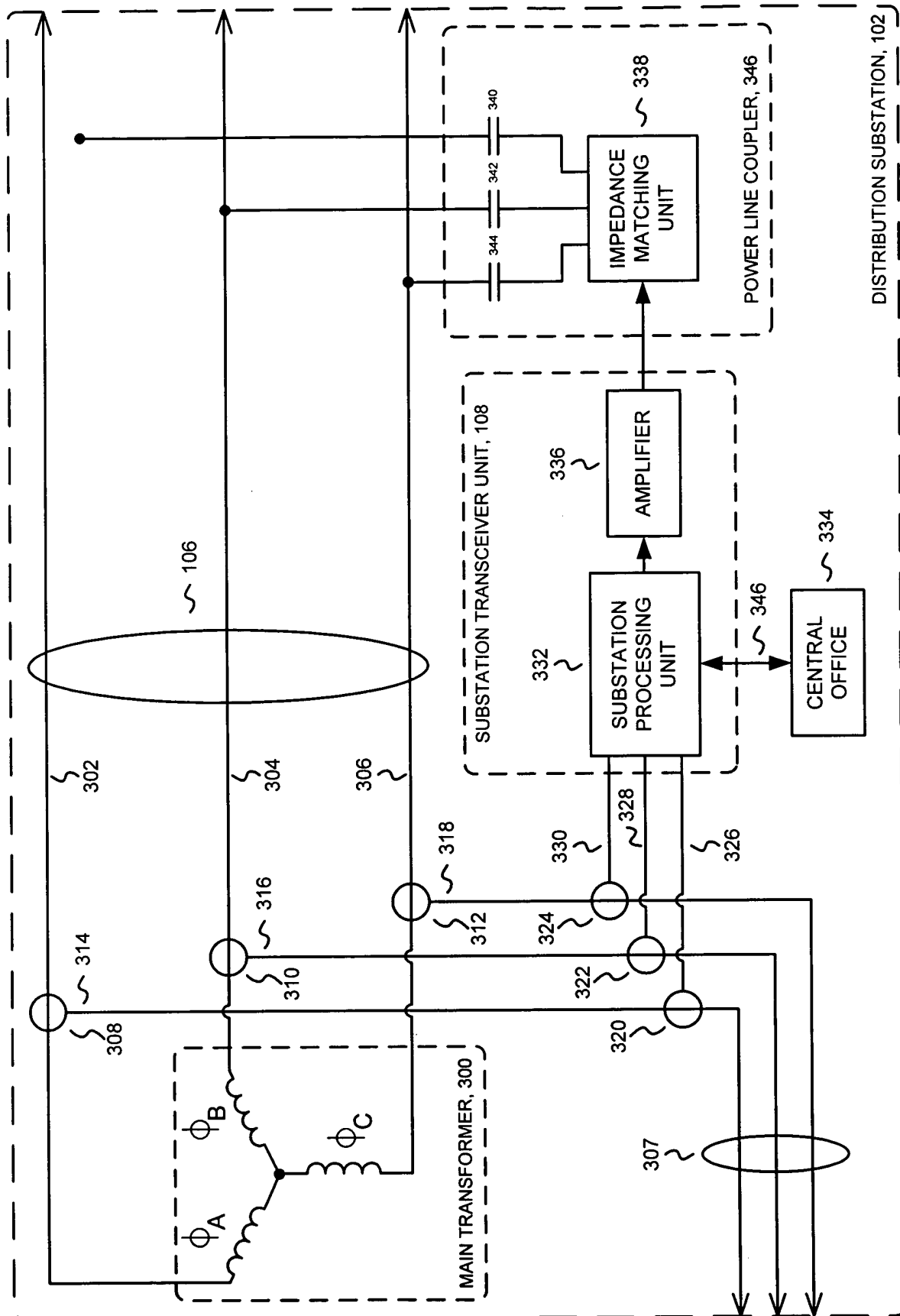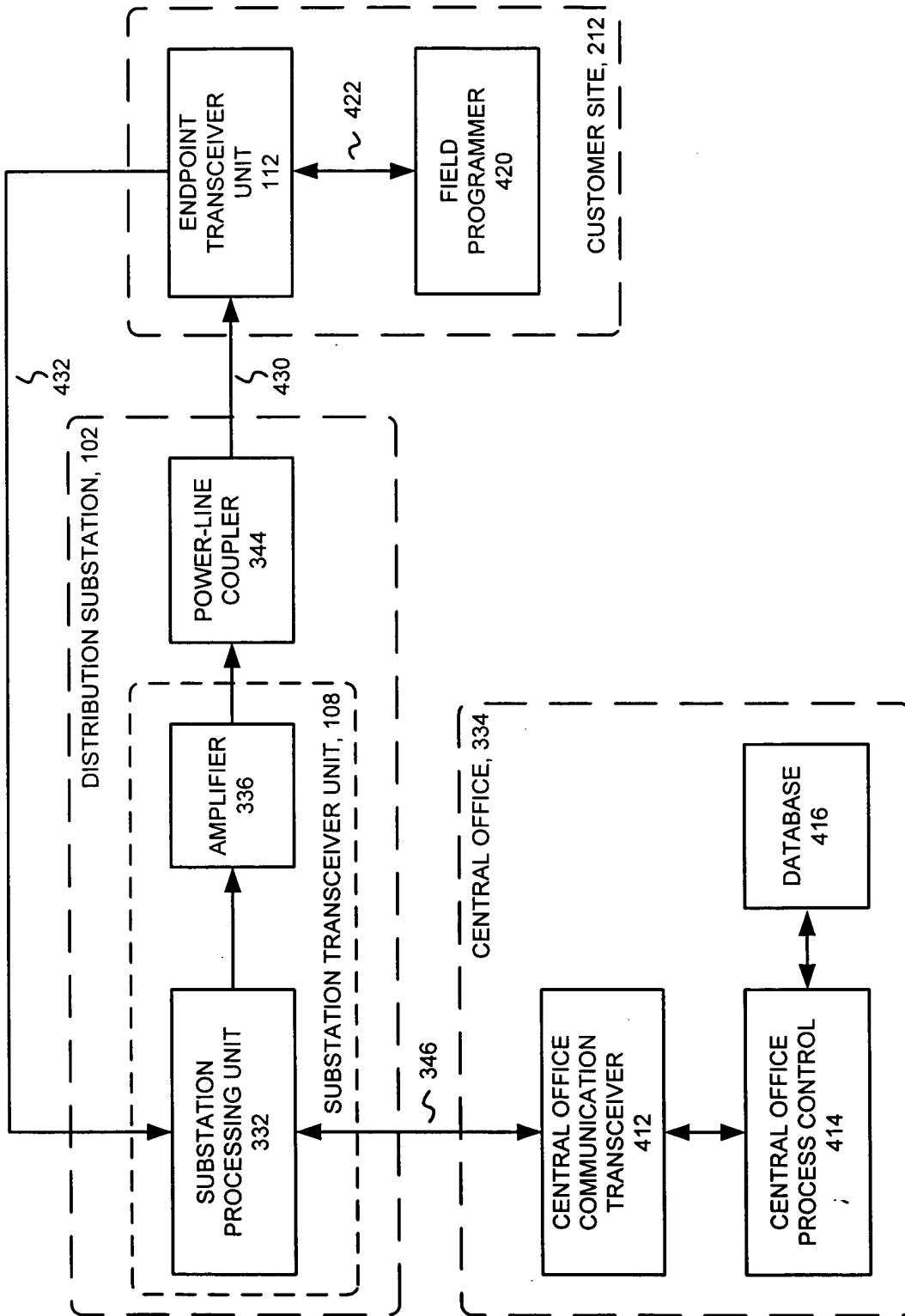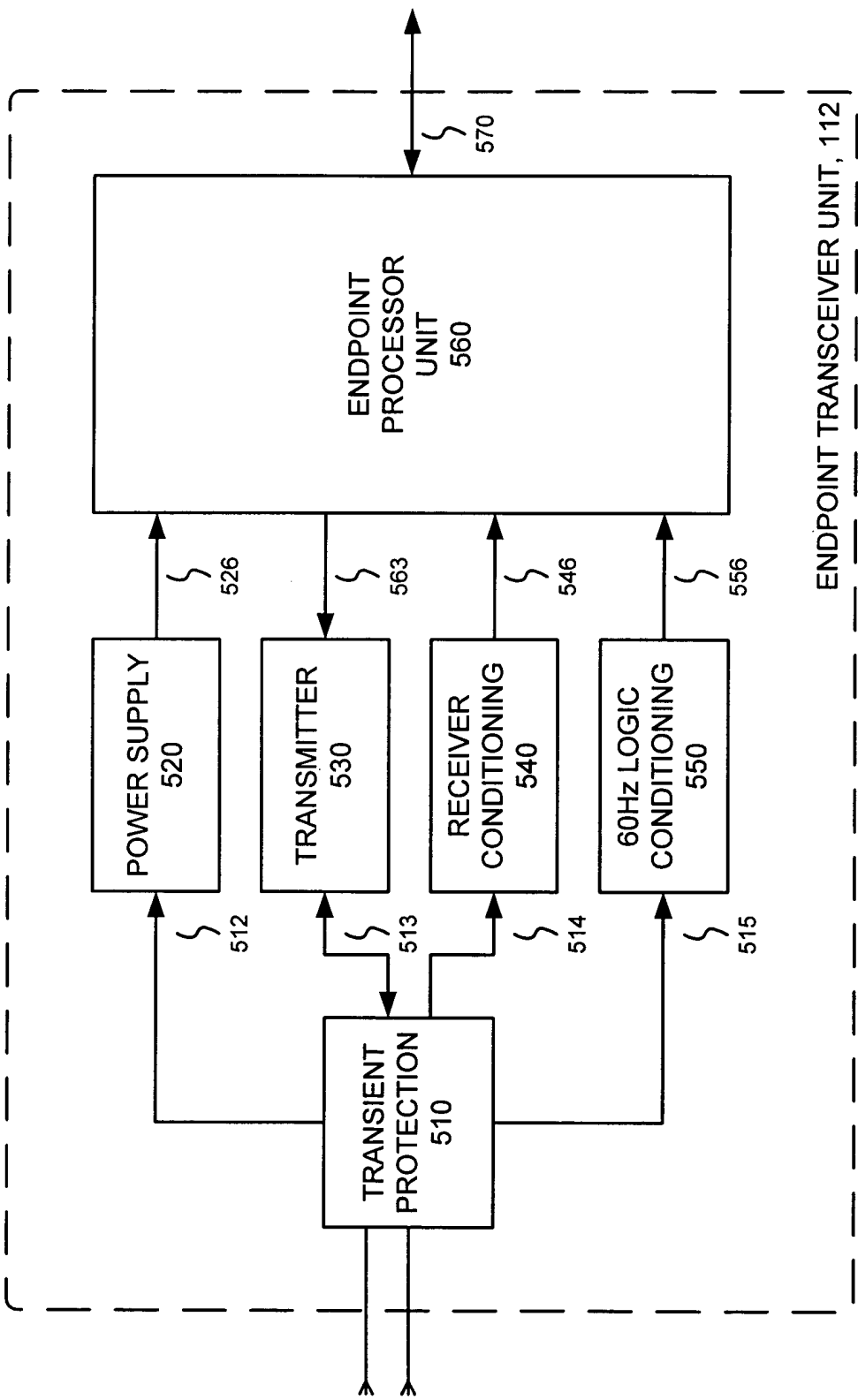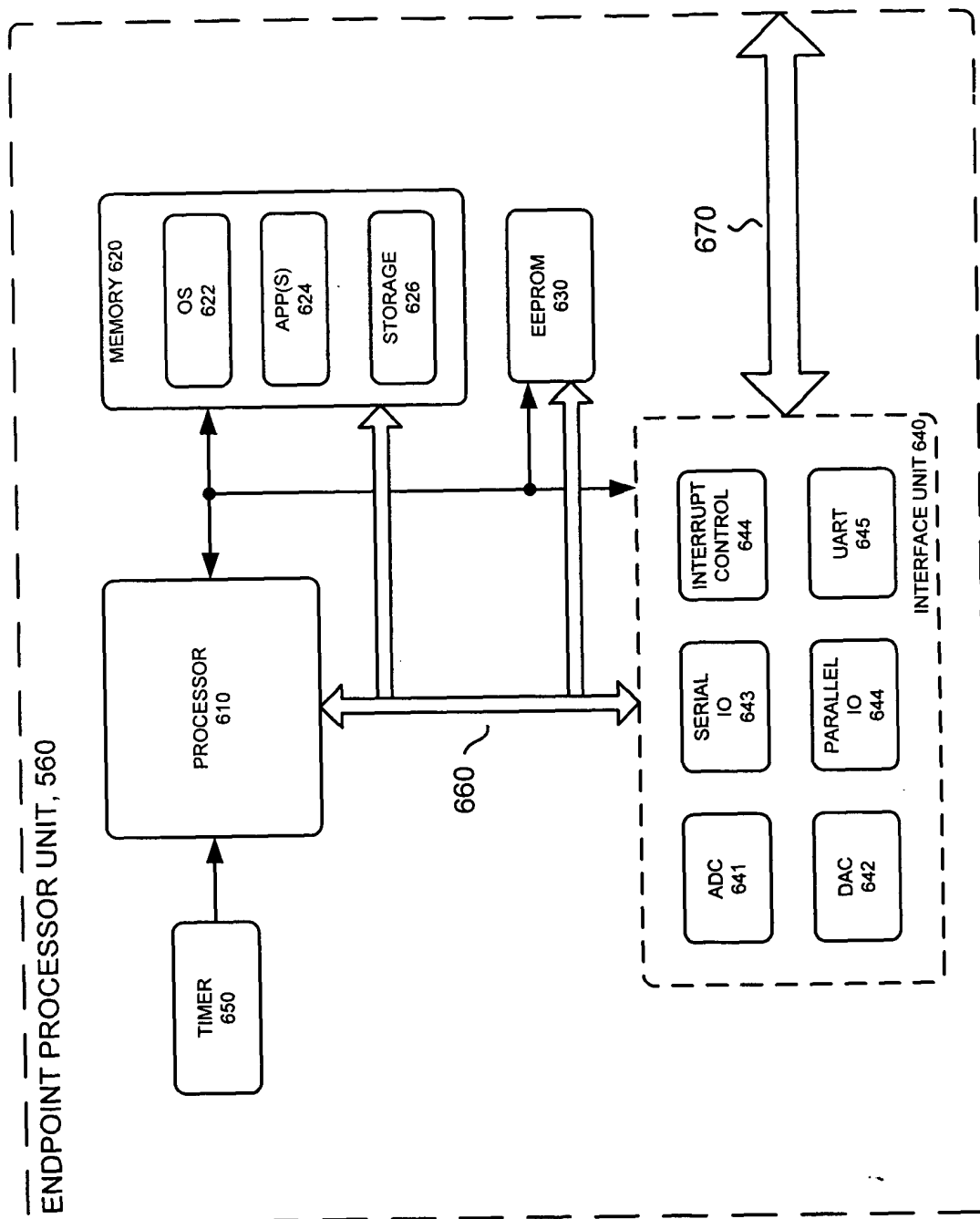644

UART
645

SERIAL
IO
643

PARALLEL
IO
644

ADC
641

DAC
642

FIGURE 6

FIGURE 7

FIGURE 8
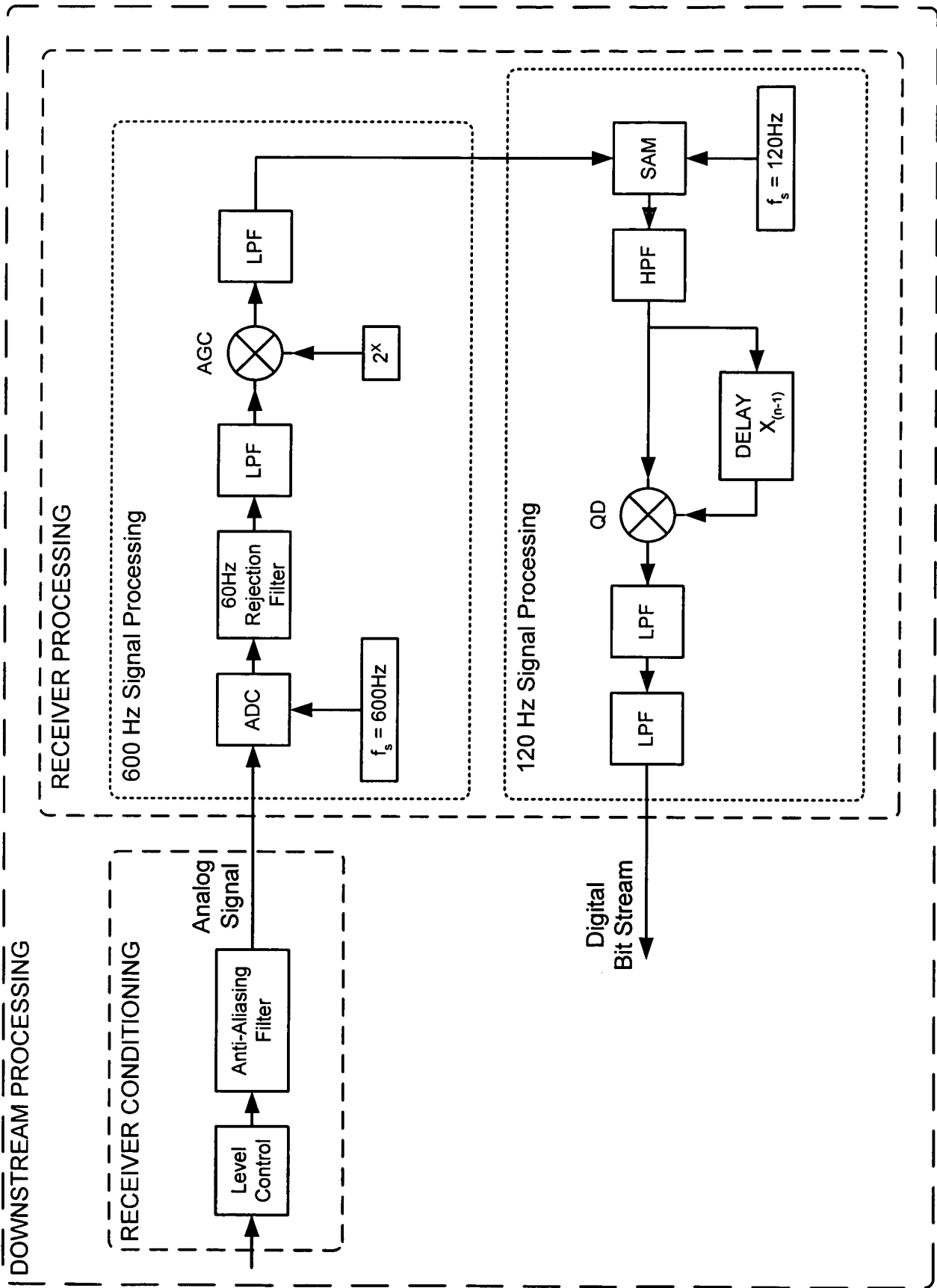
FIGURE 9
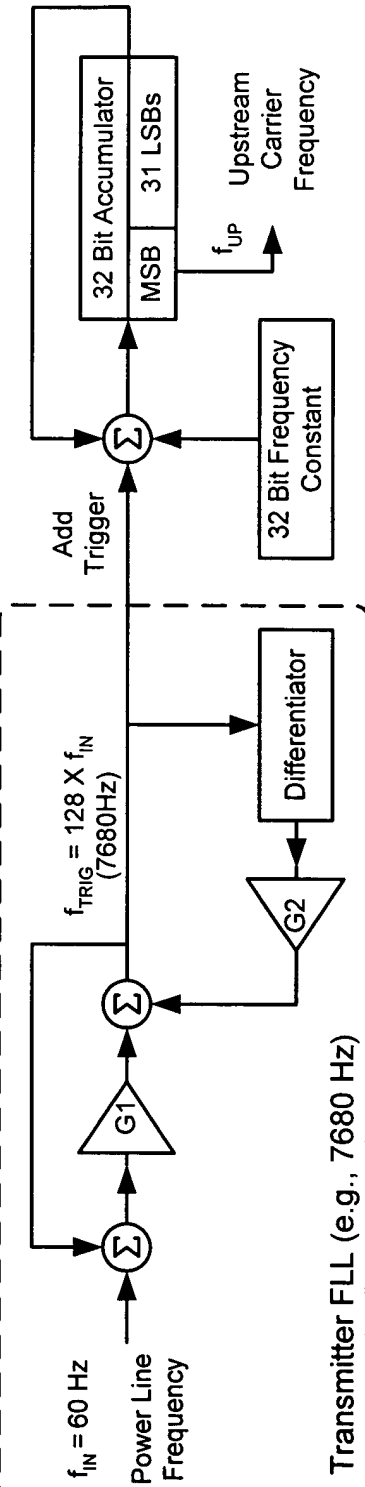
FIGURE 10

FIGURE 11

Async Flag (1)	Health Flag (1)	Data Payload (up to 49 bits)						Error Check (12)
		Data ID0	Data ID1	Data ID2	Data ID3	Data ID4	Data ID5	
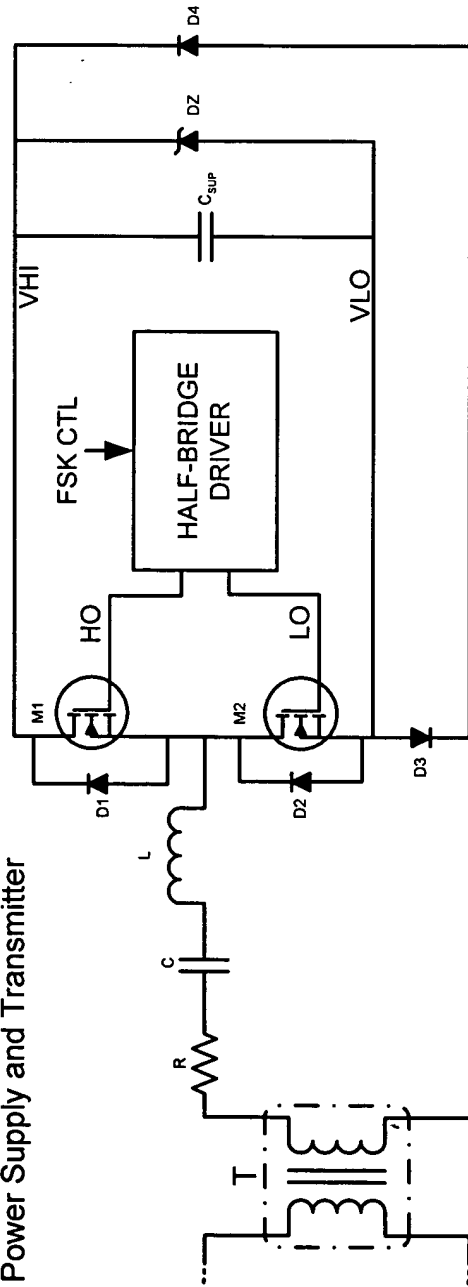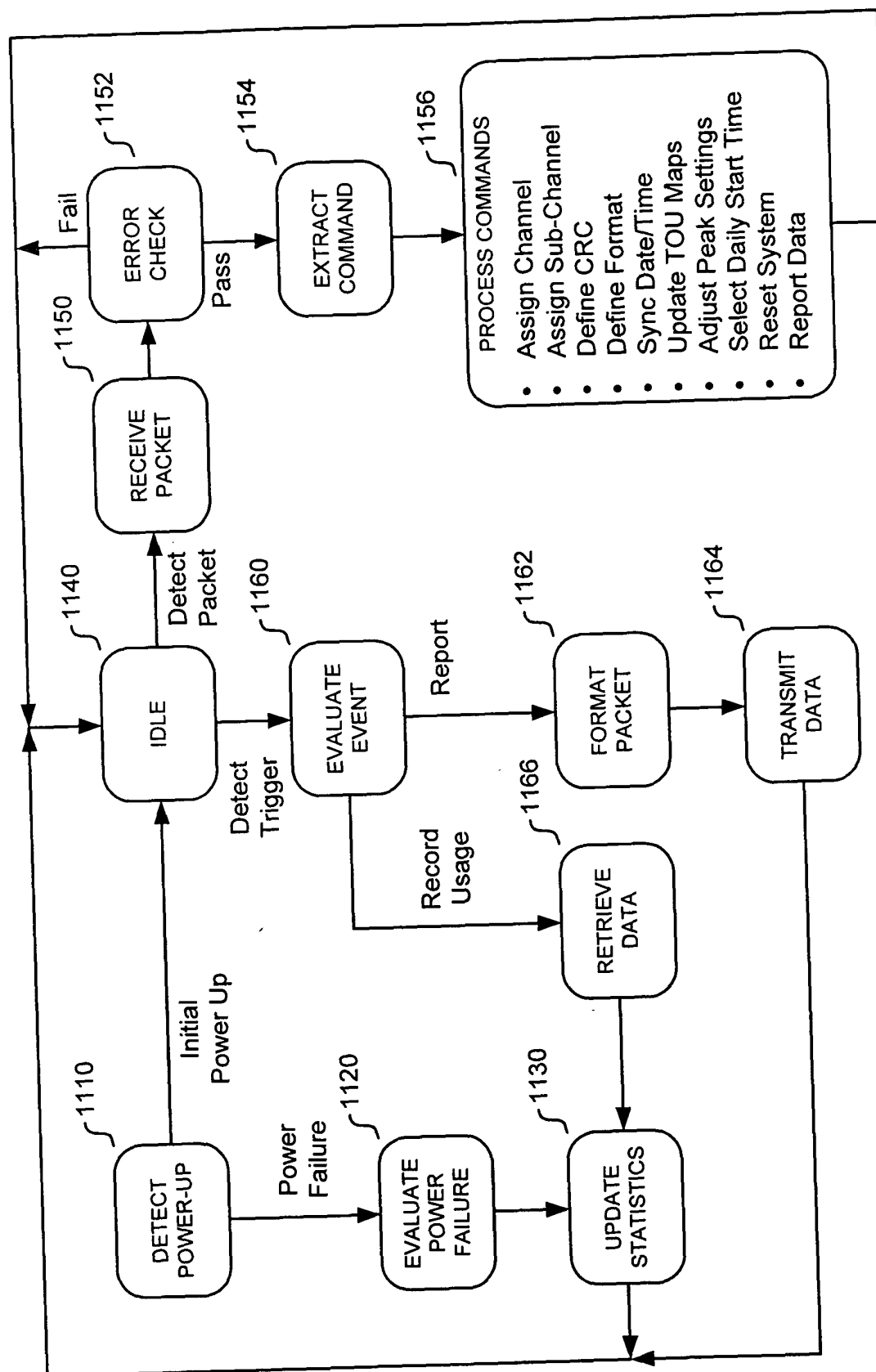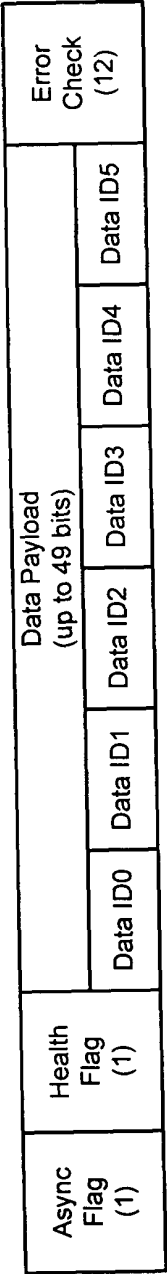
FIGURE 12

DataID	Name	Description
0	Null	Empty Packet or ending packet
1	KWH1	Current power usage meter reading in units of kWH
2	TOU1	Null or the total number of kWH accumulated in the TOU1 bucket
3	TOU2	Null or the total number of kWH accumulated in the TOU2 bucket
4	TOU3	Null or the total number of kWH accumulated in the TOU3 bucket
5	TOU4	Null or the total number of kWH accumulated in the TOU4 bucket
6	Peak1	Total number of kWH used at the recorded peak time for TOU1 Map
7	Peak2	Total number of kWH used at the recorded peak time for TOU2 Map
8	Peak3	Total number of kWH used at the recorded peak time for TOU3 Map
9	Peak4	Total number of kWH used at the recorded peak time for TOU4 Map
10	Peak1Time	Time of peak demand for TOU1 Map
11	Peak2Time	Time of peak demand for TOU2 Map
12	Peak3Time	Time of peak demand for TOU3 Map
13	Peak4Time	Time of peak demand for TOU4 Map
14	Peak1Date	Date for Peak1 Demand
15	Peak2Date	Date for Peak2 Demand
16	Peak3Date	Date for Peak3 Demand
17	Peak4Date	Date for Peak4 Demand
18	LastPeak1	Last Peak1 Demand
19	LastPeak2	Last Peak2 Demand
20	LastPeak3	Last Peak3 Demand
21	LastPeak4	Last Peak4 Demand
22	LastPeak1Time	Time of Last Peak1 demand
23	LastPeak2Time	Time of Last Peak2 demand
24	LastPeak3Time	Time of Last Peak3 demand
25	LastPeak4Time	Time of Last Peak4 demand
26	LastPeak1Date	Date of Last Peak1 demand
27	LastPeak2Date	Date of Last Peak2 demand
28	LastPeak3Date	Date of Last Peak3 demand
29	LastPeak4Date	Date of Last Peak4 demand
30 - 41	------	Reserved

TABLE 1

DataID	Name	Description
42	MomInt	Total number of momentary interruptions
43	MomEvent	Total number of momentary event interruptions
44	SusInt	Total number of sustained interruptions
45	SusIntDur	Total accumulated time for sustained interruptions
46	ConfigStatusFlags	Configuration status flags
47	SerNum	An internal serial number for the endpoint
48	ModelID	Identifies the model type or model family for the endpoint
49	HWRev	Hardware revision ID for the endpoint
50	SWVersion	Software version info for the endpoint
51	FlashCRC	CRC of application code
52	ReqID	Request ID of last async-type request received by the endpoint
53	LastResetTime	Time of last demand reset in minutes
54	LastResetDay	Day of the last demand reset in day-of-year format
55	Group 0	Group Address that the endpoint subscribes to for downstream reception
56	Group 1	Group Address that the endpoint subscribes to for downstream reception
57	Group 2	Group Address that the endpoint subscribes to for downstream reception
58	Group 3	Group Address that the endpoint subscribes to for downstream reception
59	Group 4	Group Address that the endpoint subscribes to for downstream reception
60	Group 5	Group Address that the endpoint subscribes to for downstream reception
61	Group 6	Group Address that the endpoint subscribes to for downstream reception
62	Group 7	Group Address that the endpoint subscribes to for downstream reception
63	PacketStartTime	Time of the day that the first bit of the upstream transmission starts
64	ElectricMetTime	The time at which electric metrology readings are captured - time in minutes
65	MomLogPtr	Memory address pointer for storing the next detected momentary interrupt
66	TxConst0	Transmitter upstream frequency constant for logic 0 modulation
67	TxConst1	Transmitter upstream frequency constant for logic 1 modulation
68	TxSubID	Sub-channel ID assigned for upstream communications
69 - 129	----------	Reserved
130	InternalBIT	Built in test flag for internal faults
131	InterfaceBIT	Built in test flag for interface faults
132	SystemStatus	Built in status flags

TABLE 2

DataID	Name	Description
133	Minutes	The current endpoint time in minutes (0 - 1439, 0 = Midnight)
134	DayOfWeek	The current endpoint day of the week (0 - 6, 0 = Sunday)
135	DayOfYear	The current endpoint day of the year (0-365, 0 = Jan 1)
136	TxBuffer	A variable length buffer that is internally used by the endpoint
137	SubIDCount	Number of SubIDs received by the endpoint since power-up
138	SequenceNum	The sequence number of the currently loaded packet
139	Temperature	The current internal temperature of the endpoint
140	SubID	Current sub-channel ID for the current downstream transmission
141	Demand	Instantaneous demand recorded by the endpoint over the last peak demand interval
142	WhiteFilter	Filtered maximum level for white while the disk is in the white state
143	BlackFilter	Filtered minimum level for black while the disk is in the black state
144	WhiteThreshold	Threshold above which the disk state is considered white
145	BlackThreshold	Threshold below which the disk state is considered black
146	OptoMin	Minimum reading for FilteredOpto
147	OpticMax	Maximum reading for FilteredOpto
148	FilteredOpto	Filtered optic reading that is used to determine the disk state
149	KhConst	32-bit constant
150	AGCLevel	8-bit AGC setting, where the gain of the front end is set to $2^{AGCLevel}$
151	MeterGroupCRC	The CRC of the Meter and Group configuration settings
152	BlackMin	Minimum reading while disk is in a black state - unfiltered
153	WhiteMax	Maximum reading while disk is in a white state - unfiltered
154	OptoSample	Unfiltered Optic reading
155	kWHAccumulator	32-bit partial kWH accumulator in units of $1/2^{24}$ of a kWH
156	Kp7680	8 Bit 7680 Hz FLL proportional error gain coefficient
157	Kd7680	8 Bit 7680 Hz FLL differential error gain coefficient
158	Kp60	8 Bit 60 Hz FLL proportional error gain coefficient
159	Kd60	8 Bit 60 Hz FLL differential error gain coefficient
160	Kc60	8 Bit 60 Hz FLL common gain coefficient
161	FLL7680UnLckCt	Unlocked counter for 7680 Hz FLL
162	FLL7680UnLckMax	Max since power-up of Unlocked counter for 7680 Hz FLL

TABLE 3

DataID	Name	Description
163	FLL60UnLckCt	Unlocked counter for 60 Hz FLL
164	FLL60UnLckMax	Max since power-up of Unlocked counter for 7680 Hz FLL
165 - 254	------------	Reserved
255	OnesFill	56-bit constant of all 1's for filling upstream packets when necessary

TABLE 4